



Australian Bureau of Statistics

Education Services

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Resources



GEO 13 – Moving In and Moving Up

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Subject Area

Geography

Suggested Level

Years 9 - 11

Overview

This classroom activity explores the rapid changes occurring in the inner part of Australia's capital cities. It provides a useful introduction to city programs which are being undertaken by some schools. The changes noted are similar to those taking place globally. Rising fuel prices, concerns about global warming and sustainability, increasing numbers of single people and changing lifestyles contribute to the growing number of people seeking an inner city lifestyle. In Australia, the mid part of the twentieth century saw an outward drift in cities, where new suburbs were developed in response to growing car use. However, the first part of the twenty-first century has been characterised by inner city growth. The high value of urban space in the inner city has given rise to growth in apartment dwelling and as a result an increase in population density.

The activity uses Statistical Local Areas (SLAs) to define the central area of Australia's capital cities. The SLA is closely aligned with the Postal Areas of the central part of the capital cities. [QuickStats](#) and [Time Series Community profiles](#) from the Census of Population and Housing have been used, as well as related ABS publications.

Data is provided for every capital city in Australia. It is envisaged that for most activities, teachers will choose the capital city appropriate for their state.

Requirements

- Spreadsheet software program (optional)
- Map of the central area of chosen city
- Geo_12 worksheet (template or interactive population pyramid, see bottom of this page)

Instructions

Background

What is the population?

The official population count for Australia is the Estimated Resident Population (ERP), which is published quarterly in [Australian Demographic Statistics \(cat. no. 3101.0\)](#). Births, deaths and migration statistics are used to determine the Estimated Resident Population. The Census of Population and Housing is conducted every five years and provides a detailed snapshot of Australia's population at that moment in time. It also serves as a benchmark for population estimates.

Changes to the Method of Collection

Census data may be returned in two ways, namely Place of Usual Residence and Place of Enumeration. Prior to 2006, a person was counted according to their location on Census night (Place of Enumeration). However, from 2006 onwards, data are primarily shown according to where they usually live (Place of Usual Residence).

Care should be exercised when making comparisons of Census data over time and the method of data collection should be clarified.

Geographic Units

In the Census, the smallest geographic area is a Collection District. It consists of approximately 225 households and generally represents the work of one Census collector. Collection Districts are aggregated to form larger geographic areas as part of the [Australian Standard Geographic Classification \(ASGC\)](#), (cat. no. 1216.0). A Statistical Local Area (SLA) is one of these larger geographic units and for this activity is the most appropriate way of representing the inner city area of Australia's capital cities.

6.1 Where is the inner city?

Ask students to complete the following activities for a city of their choice.

1. Provide a map of the central area of the chosen city. Ask students to use the Australian Bureau of Statistics website for Census information www.abs.gov.au/census. Select 'Census Data Online' and the product 2006QuickStats. Use the 'Search' tab to locate the area of study. For all capital cities (except Brisbane, Canberra and Darwin) type in the name of the capital city and press 'Search'. Select 'Statistical Local Areas' shown in Table 1. A new map is generated showing the boundaries of this area. To view statistics on the area click 'View QuickStats'

To find the Statistical Local Area for inner Brisbane, Canberra and Darwin use the 'Browse' tab and search for the location 'Statistical Local Area'. Brisbane is found within the Inner Brisbane Statistical Subdivision, Canberra within the North Canberra

Statistical Subdivision and Darwin within the Darwin City Statistical Subdivision.

Ask students to shade their own map to show the boundaries of the Statistical Local Area covering the centre of the chosen capital city.

2. Identify the boundaries which form the northern, eastern, southern and western sides of the Statistical Local Area.

Does this area conform to your idea of the central part of the capital city? Discuss.

6.2 How many people live in the centre of our capital cities?

Activities in Section 6.2 should be completed in conjunction with the background information provided at the beginning of this section.

The Census of Population and Housing provides a snapshot of the population at a point in time. The Census is held in August during the school term.

TABLE 1: COMPARISON OF CENSUS POPULATION COUNTS FOR INNER CITY SLA, PLACE OF ENUMERATION AND PLACE OF USUAL RESIDENCE, 2006.		
Comparison of Populations	Census Community Profile Series (Time Series)	QuickStats
SLA codes and names	Located on census night (Place of enumeration)	Place of usual residence on Census night
105057201 Sydney (C) - Inner	36083	21991
205054601 Melbourne (C) - Inner	22283	11590
305011143 Brisbane City - Inner	6229	2716
405150070 Adelaide (C)	22770	16659
505057081 Perth (C) - Inner	4892	1079
605052811 Hobart (C) - Inner	1050	456
705051018 Darwin City - Inner	6239	2484
805051449 Canberra City	1822	723

Source: 2006 Census of Population and Housing, [Census Community Profile Series \(Time Series\)](#), and [QuickStats](#)

Study Table 1 and for a chosen city answer the following questions:

1. Does the number of persons usually resident in the inner city outnumber the persons enumerated?
2. For the chosen city, calculate the difference between the two count methods. Account for the difference in populations recorded.

The Estimated Resident Population (ERP), which is based on the Census Place of Usual Residence count adjusted for births, deaths and migration is the official population count. Estimates are made annually for Statistical Local areas and they are published in Regional Population Growth (cat. no. 3218.0), see Table 2.

3. Using the official population count, the ERP (Table 2), rank Australia's capital cities according to the population of the innermost Statistical Local Areas in 2007. Is the ranking one that was expected?

TABLE 2: Estimated Resident Population at 30 June, 2007 for selected SLA, AUSTRALIAN CAPITAL CITIES.			
SLA	Area km2	Population 2007(p)	Population density 2007 (persons /km2)
Sydney (C)- Inner	4.2	23584	5607.2
Melbourne (C) - Inner	1.9	13487	7029.0
Brisbane City -Inner	0.7	3443	4892.7
Adelaide (C)	15.6	18575	1192.8
Perth (C) - Inner	1.8	1290	708.5
Hobart (C) - Inner	0.6	491	798.4
Darwin City - Inner	2.6	2833	1110.3
ACT Canberra - City	1.5	767	525.1

(p) estimates for 2007 are preliminary

Source: Regional Population Growth (cat. no. 3218.0)

4. Are there persons in the inner city who may not have been counted on Census night?(answer provided)

6.3 Have the inner parts of our capital cities changed over time?

1. For a city of your choice and using Table 3, make a graph to show the growth in the number of people resident in the inner city between 1996 and 2006. (answer provided)

The average annual growth rate is calculated as a percentage using the formula below, where P_0 is the population at the start of the period, P_n is the population at the end of the period and n is the length of the period between P_n and P_0 in years.

$$\left[\left(\frac{P_n}{P_0} \right)^{\frac{1}{n}} - 1 \right] \times 100$$

2. Use the average annual growth rates provided in Table 3 to compare growth of your chosen city with that of other Australian cities in the period 1996- 2006.

3. In groups, ask students to discuss the changes taking place in the city to accommodate a growing population.

TABLE 3: POPULATION ESTIMATES BY STATISTICAL LOCAL AREA, 1996 - 2006					
Statistical Local Area	1996	2001	2006	1996-2001	2001-2006
	no.	no.	no.	Average Annual Growth Rate (%)	Average Annual Growth Rate (%)
Sydney (C) - Inner	6233	14618	22733	18.6	9.2
Melbourne (C) - Inner	1774	6498	12431	29.6	13.9
City - Inner Brisbane	345	1021	2823	24.2	22.6
Adelaide (C)	12831	13289	17632	0.7	5.8
Perth (C) - Inner	420	777	1227	13.1	9.6
Hobart (C) - Inner	378	439	488	3.0	2.1
Darwin City - Inner	1823	2112	2820	3.0	6.0
ACT Canberra - City	174	484	720	22.7	8.3

Source: Regional Population Growth, Australia (cat. no. 3218.0)

6.4 What is the population density of our inner cities?

1. Use Table 2, Estimated Resident Population at 30 June 2007, to identify the population density of your chosen city.
2. How is population density calculated?
3. How would population density change during a 24 hour period in the inner city areas?
4. Ask students to research how the population density of Australian inner city areas compares with the world's major cities. Whilst completing this task ask the questions
 - (1) What is the source of the data?
 - (2) How was the data collected?

6.5 What are the characteristics of dwelling units in the inner city?

There has been a significant increase in apartment living in the inner cities due to population growth, changes in the composition of households, lifestyle choices and the high value of land. The Census of Population and Housing gathers data about dwelling types. A number of activities are provided below. Choose one or more activities to suit the student group.

1. For the city of your choice, use Table 4 and create a graph to show the change in the number of flats, units or apartments between 1996 – 2006.

2. Calculate the percentage increase in flats, units or apartments for the ten years from 1996 – 2006 for your chosen city. (answer provided)

3. For the city of your choice and with reference to the statistics calculated above and provided in Table 4, briefly describe the changes which have taken place in this type of private dwelling between 1996 and 2006 and provide reasons for the change identified.

4. Locate an image of a high rise apartment block (Google Maps satellite/Streetview may be helpful) and ask students to annotate it to show the advantages and disadvantages of living in this type of accommodation.

TABLE 4: SELECTED DWELLING CHARACTERISTICS FOR SELECTED SLA's OF AUSTRALIAN CAPITAL CITIES, 2001 and 2006				
Statistical Local Area	No. Occupied Private Dwellings: Flat, unit or apartment 1996	No. Occupied Private Dwellings: Flat, unit or apartment 2001	No. Occupied Private Dwellings: Flat, unit or apartment 2006	Flats, units or apartments as % of Total Occupied Private Dwellings in Region 2006
Sydney (C) - Inner	2141	6242	8667	88.8%
Melbourne (C) - Inner	764	3991	6621	98.2%
Brisbane City - Inner	101	518	1844	96.5%
Adelaide (C)	1922	2392	3252	41.5%
Perth (C) - Inner	106	178	538	78.5%
Hobart (C) - Inner	22	26	24	20.0%
Darwin City - Inner	361	1271	1068	91.0%
ACT Canberra - City	59	242	419	92.5%

Source: 2006 [Census of Population and Housing, Census Community Profiles](#)(Time Series), [QuickStats](#).

5. Debate the topic:

“Apartment living is the only sustainable way for Australians to live.”

6. Imagine that a two storey heritage precinct in the inner part of your chosen capital city is to be redeveloped into a 40 storey office and residential tower.

6.1 Create a role play to simulate the arguments which will be advanced by different members of the community to this proposal. Roles may include: A local council representative, a council officer responsible for granting the planning permission, a resident adjacent to the development who will be overlooked by the tower, a young person seeking accommodation in the city, an elderly citizen, a public transport activist, a local retailer, an environmentalist, an architect, a service provider (e.g. water, gas or electricity) and a historian.

6.2 The building is to be designed with 'green' credentials. Research methods of construction that are being implemented to make high rise city developments more environmentally sustainable.

7. Imagine the year is 2040 and there is a great deal of urban renewal taking place in the centre of your chosen city. The office and apartment blocks built at the end of the last century and the start of this century are being replaced by much higher towers. Following a visit (either real or virtual) to the inner city area to study the nature and distribution of the high rise towers, identify the towers that you would recommend for heritage status as classic examples of late twentieth century architecture. These towers will become heritage buildings and will therefore be protected against future urban renewal. With the aid of annotated photographs illustrate why the chosen high rise building should be preserved.

6.6 Who lives in the inner city?

1. The Estimated Resident Population (ERP) provides the most accurate count of the population. Use the statistics provided in Table 5a-c and the template or interactive age sex pyramid provided (see .xls file provided at the bottom of this page), to create an age sex pyramid for the capital city of choice. The age sex pyramids are also provided for comparison in the answer section of this activity.

2. Describe the pyramid by choosing the correct words in the spaces below.

The age sex pyramid presents males to the right/left and females to the left/right. The base of the pyramid is wider/narrower than the middle section and there were approximatelychildren aged less than 15 years old. The top of the pyramid is wide/narrow, with approximatelypeople over the age of 75 years. The sides of the pyramid representing the ages above 15 years are concave/ convex and the most prominent bulge occurs atyears. There are approximately people in this age category. The sides of the pyramid above 15 years of age slope evenly/unevenly. Males and females occur in similar/very different numbers throughout the age groups although there are more males than females in the following age groups and more females than males in these age groups.....

3. Explain the shape of the pyramid by answering the following questions;

a) Why is the base narrow?

b) Why is the top narrow?

c) What reasons explain the large bulge in numbers?

d) What reasons explain variations between the sexes in the different age groups?

4. Ask students to brainstorm the advantages and the disadvantages of living in the inner city for people of different age groups e.g. very young children, young adults, working population and the elderly. In addition, discuss if they would like to live

there?

TABLE 5a: ESTIMATED RESIDENT POPULATION BY AGE AND SEX, selected SLA's JUNE 30, 2007									
	SYDNEY(C) INNER			MELBOURNE(C) INNER			BRISBANE INNER		
Age (years):	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
0-4 years	316	278	594	103	92	195	31	46	77
5-9 years	140	178	318	32	41	73	16	20	36
10-14 years	193	158	351	33	25	58	19	16	35
15-19 years	550	562	1112	529	560	1089	73	61	134
20-24 years	2380	2779	5159	2112	2315	4427	374	317	691
25-29 years	2796	2561	5357	1439	1278	2717	351	259	610
30-34 years	1382	1286	2668	731	563	1294	210	153	363
35-39 years	847	660	1507	415	320	735	159	97	256
40-44 years	676	536	1212	312	208	520	133	74	207
45-49 years	668	495	1163	264	213	477	89	93	182
50-54 years	604	492	1096	210	197	407	122	99	221
55-59 years	506	415	921	218	219	437	140	90	230
60-64 years	397	322	719	185	112	297	93	79	172
65-69 years	282	210	492	94	74	168	62	41	103
70-74 years	196	176	372	52	62	114	34	22	56
75-79 years	137	101	238	42	36	78	11	11	22
80-84 years	84	88	172	46	34	80	3	13	16
85 years and over	63	87	150	16	23	39	4	7	11
Total	12217	11384	23601	6833	6372	13205	1924	1498	3422

Source: Population by Age and Sex, Regions of Australia, 2007 (cat.no 3235.0)

TABLE 5B: ESTIMATED RESIDENT POPULATION BY AGE AND SEX, selected SLA's JUNE 30, 2007									
	ADELAIDE (C)			PERTH (C) INNER			HOBART (C) INNER		
Age (years):	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
0-4 years	207	219	426	12	15	27	2	9	11
5-9 years	154	128	282	6	2	8	6	5	11
10-14 years	128	159	287	12	5	17	0	0	0

15-19 years	582	609	1191	21	28	49	21	16	37
20-24 years	1814	1990	3804	116	109	225	67	37	104
25-29 years	1500	1170	2670	123	92	215	43	35	78
30-34 years	996	726	1722	79	69	148	24	17	41
35-39 years	711	541	1252	113	46	159	25	12	37
40-44 years	649	426	1075	88	34	122	15	12	27
45-49 years	493	438	931	76	29	105	24	14	38
50-54 years	527	428	955	47	24	71	20	18	38
55-59 years	563	512	1075	34	30	64	17	6	23
60-64 years	427	407	834	28	32	60	13	1	14
65-69 years	328	257	585	29	11	40	6	5	11
70-74 years	172	208	380	15	5	20	8	6	14
75-79 years	157	187	344	9	7	16	5	3	8
80-84 years	147	184	331	10	6	16	1	1	2
85 years and over	109	227	336	0	0	0	4	3	7
Total	9664	8816	18480	818	544	1362	301	200	501

Source: Population by Age and Sex, Regions of Australia, 2007 (cat.no 3235.0)

TABLE 5C: ESTIMATED RESIDENT POPULATION BY AGE AND SEX, SELECTED SLA's JUNE 30, 2007						
	DARWIN CITY INNER			ACT CANBERRA CITY		
Age (years):	Males	Females	Persons	Males	Females	Persons
0-4 years	48	33	81	5	9	14
5-9 years	27	13	40	1	1	2
10-14 years	30	33	63	3	9	12
15-19 years	40	81	121	9	8	17
20-24 years	239	171	410	87	89	176
25-29 years	253	200	453	89	55	144
30-34 years	185	126	311	61	40	101
35-39 years	160	102	262	47	28	75
40-44 years	127	67	194	32	16	48
45-49 years	150	58	208	32	17	49
50-54 years	124	76	200	33	10	43
55-59 years	137	57	194	16	16	32

60-64 years	114	51	165	25	7	32
65-69 years	65	34	99	5	9	14
70-74 years	40	13	53	3	5	8
75-79 years	26	21	47	9	5	14
80-84 years	13	24	37	6	4	10
85 years and over	5	21	26	4	0	4
Total	1783	1181	2964	467	328	795

Source: Population by Age and Sex, Regions of Australia, 2007 (cat.no 3235.0)

Glossary

Average annual growth rate:

The average annual growth rate is calculated as a percentage using the formula below, where P_0 is the population at the start of the period, P_n is the population at the end of the period and n is the length of the period between P_n and P_0 in years.

$$\left[\left(\frac{P_n}{P_0} \right)^{\frac{1}{n}} - 1 \right] \times 100$$

Collection District(CD):

Is the second smallest area defined in the Australian Standard Geographic Classification. The CD is the smallest unit for collection and processing in the Census of Population and Housing.

Estimated Resident Population (ERP):

Is the count of all people regardless of citizenship and nationality, who usually live in Australia, with the exception of foreign diplomats and their families. It is the official measure of the Australian population.

Place of Enumeration:

Is the place at which a person is counted i.e. where he/she spent Census Night, which may not be where he/she lives.

Place of Usual Residence:

This is the place where a person usually lives.

Statistical Local Area (SLA):

Forms part of the Australian Standard Geographic Classification and is an area composed of one or more Collection Districts. SLAs are Local Government Areas or parts thereof.

References

(Note: Links to ABS publications are to the most recent release. Previous releases can be accessed by selecting the 'Past & Future Releases' tab.)

Australian Standard Geographic Classification (ASGC), (cat. no. 1216.0).

Census of Population and Housing, 2006, <http://www.abs.gov.au/census>

[Population by Age and Sex, Regions of Australia, 2007](#) (cat.no. 3235.0)

[Regional Population Growth](#) (cat. no. 3218.0)

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Student Activity



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